

## ABSTRACT

Methods are provided for predicting the effect of a drug given the drug dose and individual patient clinical characteristics. A neural network is trained on samples of clinical data including the observed drug dose and effect on patients, as well as their individual clinical characteristics. The neural network is then validated to ensure that its predictions fall within an acceptable error range. The neural network is used to predict the effect of a given drug dose for a given set of individual patient clinical characteristics. Methods are also provided for predicting the drug dose required to achieve a desired effect. Another neural network is trained on samples of clinical data including the observed drug dose and effect on patients, as well as their individual clinical characteristics. The neural network is then validated to ensure that its predictions fall within an acceptable error range. The neural network is used to predict the dose of a drug dose required to achieve a desired effect for a patient with a given set of individual clinical characteristics. The first neural network is used to generate training data for the second neural network.